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Psychometric Properties of the Resourcefulness Scale Among Caregivers of Persons With Autism Spectrum Disorder

Abir K. Bekhet
Marquette University, abir.bekhet@marquette.edu

Jaclene Zauszniewski
Case Western Reserve University

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Abir K. Bekhet
Marquette University College of Nursing Milwaukee, WI, USA
Jaclene A. Zauszniewski
Case Western Reserve University, Cleveland, OH, USA

Abstract

Caregiving for children with autism spectrum disorder (ASD) can be very costly to caregivers' well-being. Resourcefulness interventions have shown increases in positive health outcomes. However, before delivering the intervention, there should be a reliable and a valid measure to test resourcefulness. The psychometric properties of the Resourcefulness Scale (RS) have not been examined among ASD caregivers. This study examined the psychometrics of the 28-item RS in a convenience sample of 204 ASD caregivers. A Cronbach's alpha of .91 showed the internal consistency of the RS. Construct validity was supported by the emergence of two dimensions of resourcefulness (personal and social) in a confirmatory factor analysis and by substantial intercorrelations between the

two subscales ($r = .48$, $p < .001$). Findings suggested the reliability and validity of RS among ASD caregivers, which is a necessary step toward implementing resourcefulness interventions to help ASD caregivers to deal with their stress and improve their quality of life.

Keywords

mental health, clinical focus, caregivers, population focus behavior/symptom focus, instrument development

In the United States, 1 out of 88 persons are affected with autism spectrum disorder (ASD; Centers for Disease Control and Prevention, 2012). ASD is a complex neurological and developmental disorder that influences a person's communication and his or her ability to interact socially (Karst & Van Hecke, 2012). Persons with ASD can be aggressive, overactive, self-injurious, and can demonstrate repetitive and stereotyped behaviors (Karst & Van Hecke, 2012; Matson & Fodstad, 2009). ASD symptoms appear before age 3 and affect individuals throughout their life span (American Psychiatric Association, 2000). More importantly, ASD affects not only the diagnosed person but also his or her caregivers, families, and the community. There is ample evidence that caregiving for persons with ASD can lead to numerous physical and psychological problems (Altiere & Von Kluge, 2009; Benson, Karlof, & Siperstein, 2008; Phetrasuwan & Miles, 2009).

A review of recent literature shows that ASD caregivers report depressive symptoms as a result of the burden of providing care to persons with ASD (Carter, Martinez-Pedraza, & Gray, 2009; Ekas, Lickenbrock, & Whitman, 2010). Caregiver burden can result from many factors, including the child's challenging behaviors and the caregiver's lack of social interactions, financial problems, and worry about the future (Carbone, Behl, Azor, & Murphy, 2010; Montes & Halterman, 2007).

Previous research demonstrates that greater resourcefulness is associated with more adaptive functioning and greater life satisfaction (Bekhet, Zauszniewski, & Wykle, 2008; Boonpongmanee, Zauszniewski, & Morris, 2003; Huang et al., 2010). Resourcefulness is a cognitive-behavioral repertoire of self-control skills that are accompanied by one's ability to adapt effectively with adverse situations (personal resourcefulness) or to seek help from others when one is unable to function independently (social resourcefulness; Zauszniewski, Bekhet, & Suresky, 2008).

Previous research on resourcefulness has focused on various populations, including diabetic females (Zauszniewski & Chung, 2001), pregnant women (Boonpongmanee et al., 2003), children (Zauszniewski, Chung, Chang, & Krafcik, 2002), older adults with chronic conditions (Zauszniewski, Chung, & Krafcik, 2001), and older adults who have relocated to retirement communities (Bekhet et al., 2008). In caregiver populations, resourcefulness has been studied among caregivers of persons with dementia (Bekhet, 2013; Gonzalez, 1997), African American female caregivers (Picot, Zauszniewski, & Delgado, 1997), caregivers of frail elders (Fingerman, Gallagher-Thompson, Lovett, & Rose, 1996), caregivers of persons with serious mental illness (Zauszniewski et al., 2008), primary caregivers of adolescents with schizophrenia (Wang, Rong, Chen, Wei, & Liu, 2007), and grandmother caregivers (Musil, Jeanblanc, Burant, Zauszniewski, & Warner, 2013). However, resourcefulness among caregivers of persons with ASD has received little attention (Bekhet, Johnson, & Zauszniewski, 2012).

Although caregivers of persons with ASD might benefit from a resourcefulness-training intervention, it is critical to first determine whether the existing measure of resourcefulness, the Resourcefulness Scale (RS) is reliable and valid for this population. To date, the psychometric properties of the RS have not been examined among caregivers of persons with ASD. In the study reported here, we expected to establish the reliability and validity of the RS measure in this population.

The concept of "learned resourcefulness" was initially used by Meichenbaum (1977) to describe attitudes that can be used to cope effectively with external stressors to achieve control over stressful situations. It is conceptualized as an intrapersonal factor that influences human behavior (Meichenbaum, 1977). Eight years later, Meichenbaum developed a stress inoculation program with three major components: (a) self-monitoring of maladaptive thoughts, feelings, and behaviors; (b) emotion regulation and other self-control skills; and (c) problem-solving skills. On the completion of the program, participants were expected to have learned those skills to help them to cope with stress, thereby developing learned resourcefulness, which Meichenbaum equated with psychological antibodies for managing stress, coping effectively, and maintaining health despite confrontation with stressors.

Even though the concept was first introduced by Meichenbaum (1977), many researchers have used Rosenbaum's conceptualization of learned resourcefulness, which describes it as a cognitive-behavioral repertoire of self-control skills, not merely attitudes and perceptions as previously suggested by Meichenbaum. The repertoire of cognitive-behavioral skills constituting resourcefulness is acquired throughout life, through conditioning, modeling, experience, or formal instruction, to help an individual to cope effectively with adversity by controlling the disturbing effects of thoughts, emotions, and feelings to enable the individual to function at an optimal level (Rosenbaum, 1983).

However, the conceptualizations of learned resourcefulness put forward by Meichenbaum (1985) and Rosenbaum (1980, 1990) are restricted to self-help strategies that individuals can use independently and without assistance of others. However, research has shown that persons who use self-help and help-seeking skills have the best health outcomes, including better adaptive functioning and life satisfaction than those who used either self-help or help-seeking skills and those who used neither of them (Zauszniewski, 1996). Therefore, skills that involve seeking help from others, for example, family, friends, health-care professionals, have been viewed as equally important as the self-help skills described by Rosenbaum (1990) and incorporated into current resourcefulness theory, which describes two forms of resourcefulness: personal (self-help) and social (help-seeking; Zauszniewski, 2012).

The middle range theory of resourcefulness suggests that there are two forms of resourcefulness: personal (self-help) and social (help-seeking) resourcefulness. The major constructs of the theory are contextual factors, intervening variables or process regulators (i.e., perceptions, cognitions, affect, and motivation), and quality of life outcomes (i.e., physical, psychological, and social functioning; Zauszniewski, 2012).

In this analysis, positive cognitions and perceived burden reflect the process regulators. In addition, psychological well-being and depression reflect quality-of-life outcomes. Previous research has shown that resourcefulness is positively associated with measures of positive cognitions and psychological well-being (Bekhet et al., 2012; Bekhet et al., 2008). Previous research has also shown that

resourcefulness is negatively correlated with measures of burden and depression (Bekhet, 2013; Bekhet et al., 2012; Choi, Marti, Bruce, & Hegel, 2013; Peterson, 2013). Therefore, the above-mentioned measures were used for construct validation in the study reported here.

Although the concept of resourcefulness was first introduced by Meichenbaum (1977), it was Rosenbaum (1980) who constructed the Self-Control Schedule (SCS) and branded it as a measure of learned resourcefulness. The SCS is composed of 36 items and item responses range from −3 to +3 with no zero point to indicate a neutral response. Rosenbaum (1990) suggested that the calculation of the total score for the SCS may range from −108 to +108. However, because the previously described scoring method has not been useful for predictive model testing due to the difficulty with score interpretation when positive and negative scores are possible and unequal intervals between items, its scoring has been adjusted in a 6-point scale ranging from 0 (extremely nondescriptive of them) to 5 (extremely descriptive of them; Zauszniewski, 1997). The SCS has been used by many researchers and has been found to be reliable and valid (Rosenbaum, 1980, 1990; Zauszniewski, 1997). However, the SCS does not capture help-seeking skills as other measures have done.

Two measures of social resourcefulness exist: the Social Resourcefulness Scale (SRS; Rapp, Shumaker, Schmidt, & Naughton, 1995) and the Help-Seeking Resource Scale (HSRS; Zauszniewski, 1996). The 20-item SRS measures the frequency of actions taken when an individual needs help that are rated on a 5-point scale; scores range from 0 to 80 with higher scores reflecting more frequency use of help-seeking behavior (Rapp et al., 1995). The HSRS contains 12 items that are scaled in a similar way (i.e., 6-point Likert-type scale) as the SCS; scores range from 0 to 60 with higher scores indicating the use of more help-seeking behaviors (Zauszniewski, 1996; Zauszniewski, Lai, & Tithiphontumrong, 2006)

However, these measures do not measure both forms of resourcefulness with a single measure. Although the Coping Resources Inventory for Stress (CRIS; Matheny, Aycock, Curlette, & Junker, 1993) is a 280-item true-false measure that includes items capturing self-directedness, stress monitoring, tension control, cognitive restructuring, and problem solving, which are aspects of personal resourcefulness, and social support and social ease, which are aspects of social resourcefulness, it is lengthy and therefore burdensome to complete, is specific for measuring resources for coping with stress, and does not measure frequency of use of personal- and social-resourcefulness skills.

Another available scale that has been used with parents is the 33-item Parent Resourcefulness Scale, which assesses the parent's use of positive self-statements, problem-solving strategies, delay of immediate gratification, and other self-control strategies (Chislett & Kennett, 2007). However, this scale is limited to measuring only self-help skills or personal resourcefulness.

Description of the RS

The 28-item RS (Zauszniewski et al., 2006) was used to measure individuals' abilities to use self-help (personal resourcefulness) and help-seeking behaviors (social resourcefulness) when facing challenging situations. The RS consists of 28 items and has 2 subscales: 16 items measure personal resourcefulness and 12 items measure social resourcefulness. The scale is rated on a 6-point scoring system ranging from 0 (not at all like me) to 5 (very much like me). The total scores can range from 0 to 140, with higher scores reflecting the greater resourcefulness. The scale's reliability is supported by a Cronbach's alphas of .83, .79, and .85 for the total scale and personal and social resourcefulness subscales,

respectively. Confirmatory factor analysis in older adults has indicated a strong correlation between the two resourcefulness subscales to further support its construct validity ($r = .41$, $p < .001$).

The purpose of this study was to measure the psychometric properties of the RS and its subscales that capture personal and social resourcefulness among caregivers of persons with ASD.

Method

Design and Sample

This secondary analysis of the psychometric characteristics of the RS with 204 caregivers of persons with ASD used data from two cross-sectional studies of caregivers of persons with ASD (Bekhet et al., 2012; Bekhet & Zauszniewski, 2013). The first study included 95 caregivers of persons with ASD and aimed at examining the mediator/moderator effects of positive cognitions on the relationship between caregiver burden and resourcefulness (Bekhet et al., 2012). The second study included 109 caregivers and aimed at examining the psychometric properties of a positive-thinking skills scale and used the RS as a validation measure (Bekhet & Zauszniewski, 2013). The inclusion criteria for both studies were caring for a person with ASD, able to read and understand English, Internet access, and residing in the United States. No potential participants were excluded on the basis of gender, race, or socioeconomic status.

As shown in Table 1, the two samples were similar in demographic characteristics; the majority of caregivers in both studies were females, Caucasian, primary caregivers (a father or a mother), and they were living with the care recipients in the same household. In addition, the caregivers' average age in the first study was 42.8 years (SD = 7.9) and their average age in the second study was 42 years (SD = 7). Therefore, the data from the two studies were merged to examine the psychometrics properties of the RS in a larger sample.

Table 1. Demographic Characteristics of the Parent Studies.

	Study 1 (*n* = 95)	Study 2 (*n* = 109)
Variables	*n* (%)	*n* (%)
Gender		
Females	92 (96.8%)	105 (96.3%)
Males	3 (3.2%)	4 (3.7%)
Race		
Caucasian	88 (92.6%)	96 (88%)
Others[a]	7 (7.4%)	13 (12%)
Relationship to the caregivers		
Father or a mother	87 (91.6%)	103 (94.5%)
Others[b]	8 (8.4%)	6 (5.5%)
Living situations		
Same household	94 (98.9%)	107 (98.2%)
Living apart	1 (1.1%)	2 (1.8%)

[a]African American, Hispanic, Asian.

[b]Aunts, cousins.

Data Collection

In the parent studies, caregiver participants were recruited by convenience sampling from the Interactive ASD Network (IAN) Research registry service (Bekhet et al., 2012; Bekhet & Zauszniewski, 2013). Institutional Review Board (IRB) approvals for the parent studies were obtained from the university and sent to ASD caregivers by email by IAN that directed ASD caregivers to the Internet website (www.surveymonkey.com) where a consent form and a link to the study questionnaires were housed. In one of the parent studies, those who chose to accept the incentive provided their email address at the end of the survey and were sent a code that could be redeemed for $25 at www.Amazon.com (Bekhet et al., 2012). For the second parent study, they were sent a code that could be redeemed for $15 at www.Amazon.com (Bekhet & Zauszniewski, 2013). Email addresses were destroyed after incentive codes were sent to participants. However, for this psychometric analysis, no additional incentive was provided for any of the study participants.

Instruments

Descriptive data on caregivers of persons with ASD were collected in the two parent studies. In addition, measures of positive cognitions, caregiver burden, depression, and psychological well-being were administered and used in this analysis for construct validation because these concepts are theoretically related to resourcefulness as discussed earlier (Zauszniewski, 2012).

Measures of Construct Validation

The Depressive Cognition Scale (DCS)

The DCS measures positive cognitions when scoring is not reversed; all items are phrased positively (Zauszniewski, 1995). The scale is rated on a 6-point Likert-type scale ranging from “strongly agree” (5) to “strongly disagree” (0; Zauszniewski, 1995). Total scores range from 0 to 40 with higher scores indicating a greater number of positive cognitions. The scale has been used in previous research to measure positive cognitions (Bekhet, 2013; Bekhet et al., 2008). The 8-item DCS is reliable as evidenced by a Cronbach’s alphas of .88 and .84 in samples of dementia caregivers and relocated older adults, respectively (Bekhet et al., 2008). In addition, construct validity of the DCS has been supported by correlations with measures of theoretically related constructs, namely, depression ($r = .54$, $p < .001$), resourcefulness ($r = -.37$, $p < .001$), and adaptive functioning ($r = -.60$, $p < .001$; Zauszniewski, Chung, Krafcik, & Sousa, 2001; Zauszniewski, Picot, Debanne, Wykle, & Roberts, 2002).

The Zarit Burden Interview (ZBI)

The ZBI was used to measure caregiver burden in this study (Knight, Fox, & Chou, 2000; Zarit, Reever, & Bach-Peterson, 1980). The ZBI indicates the burden that caregivers might experience as a result of the caregiving. The 22 items are rated on a 5-point Likert-type scale from “never” (0) to “nearly always” (4). Scores can range from 0 to 88, and higher scores reflect greater burden. The ZBI is reliable as indicated by Cronbach’s alphas ranging from .88 to .92 (Chou, Chu, Tseng, & Lu, 2003; Thompson, Futterman, Gallagher-Thompson, Rose, & Lovett, 1993).

The Center for Epidemiologic Studies Depression Scale (CES-D)

Depression was measured by the CES-D (Radloff, 1977). The CES-D is a 20-item Likert-type scale ranging from 0 “rarely or none of the time” to 3 “most or all of the time” (Radloff, 1977). Caregivers are asked to indicate how frequently they experience depressive feelings and behaviors during the past

week. Scores may range from 0 to 60; higher scores indicate greater depressive symptoms. The CES-D is reliable and valid as evidenced by a Cronbach's alpha of .92 (Ekas, Whitman, & Shivers, 2009) and by a significant correlations with theoretically related constructs, including the Hamilton Clinician's Rating Scale (Bekhet & Zauszniewski, 2013; Radloff, 1977).

The General Well-Being Schedule (GWB)

General well-being was measured by the 18-item GWB (Dupuy, 1984). Scores can range from 0 to110, and 14 is subtracted from the total score (Dupuy, 1984). General well-being is evaluated as follows: 0 to 60 indicates severe distress, 61 to 72 indicates moderate distress, and 73 to 110 reflect positive well-being (Dupuy, 1984). Reliability was demonstrated by a Cronbach's alpha of .92, in a sample of Black women (Taylor et al., 2003). Construct validity was evidenced by significant correlations in the expected directions with theoretically related constructs, such as depression and personal feelings (rs = .66 and .78, respectively; Fazio, 1977).

Psychometric analysis

Data were analyzed using the PASW Statistical Package for the Social Sciences (SPSS) software version 18.0. Psychometric testing of the RS measure involved determining initial estimates of reliability (internal consistency) and construct validity. Preliminary data analysis involved examination of descriptive, including means and standard deviations, as well as frequency distributions. Reliability analyses involved examination of the resourcefulness Cronbach's alphas, inter-item correlations, and item-to-total scale correlations. Construct validity involved factor analysis to determine the presence of the two types of resourcefulness within the RS (i.e., factorial validity) and examination of significant correlations in the expected direction with measures of theoretically related constructs, namely, positive cognitions, burden, depression, and psychological well-being.

Results

The mean age of caregivers was 42 years; their ages ranged from 23 to 67 years. In all, 96.8% were females, and the vast majority of the caregivers were Caucasians representing 90.2% of the total sample; 79.4% of the caregivers were married, and 14.7% were either divorced or separated. More than half of the sample (57.8%) reported an annual income of more than $45,000.

Reliability

The internal consistency of the RS was reflected in a Cronbach's alpha = .91. This estimate indicates acceptable internal consistency and exceeds the minimum criterion of .70 (Nunnally & Bernstein, 1994; Ferketich, 1991). Deletion of any one of the items would not have improved the scale alpha (Table 2). Forty percent of the inter-item correlations were between r = .30 and r = .70, indicating that the scale measures diverse aspects of personal and social resourcefulness and that the two forms of resourcefulness involve different skills. In addition, the average inter-item correlation found in this study was (r = .27)

Table 2. The RS Item Analysis.

RS Item No.	Description	Alpha if Item Deleted	Item-to-Total Score Correlations	Communality Values
RS-1	Think about reward	.907	.404	.287

RS-2	Creative visualization	.905	.503	.397
RS-3	Cognitive reframing	.904	.583	.482
RS-4	Express feelings to others	.904	.536	.415
RS-5	Let others make decision	.905	.520	.509
RS-6	Think about pleasant events	.903	.629	.522
RS-7	Systematic problem solving	.906	.435	.462
RS-8	Go to doctor	.907	.387	.278
RS-9	Think positively	.904	.591	.446
RS-10	Depend on others	.906	.431	.617
RS-11	Keep busy	.904	.553	.391
RS-12	Listen to others	.906	.467	.371
RS-13	Relaxation	.904	.556	.464
RS-14	Get help from others	.906	.466	.462
RS-15	Overcome failure	.903	.646	.498
RS-16	Impulse control	.905	.497	.324
RS-17	Anger management	.907	.381	.386
RS-18	Consider alternatives	.907	.396	.368
RS-19	Borrow from others	.908	.381	.207
RS-20	Talk with others	.903	.594	.509
RS-21	Remain calm	.904	.537	.465
RS-22	Planning behavior	.906	.416	.369
RS-23	Record keeping	.907	.407	.268
RS-24	Ask others to help	.904	.562	.480
RS-25	Allow others to do things	.903	.593	.528
RS-26	Go out with others	.907	.401	.292
RS-27	Be with others	.907	.434	.358
RS-28	Increase concentration	.905	.513	.360

Note. RS = Resourcefulness Scale.

To determine the homogeneity of the scale, the corrected item-to-total scale correlations (correlation between each item and total scale, excluding itself) were examined (Ferketich, 1991). As shown in Table 2, all the scale items had item-to-total scale correlations within the recommended range of r = .30 to r = .70, indicating the homogeneity of the RS.

Dimensionality and construct validity

Based on the recommended criteria of 5 to 10 participants per item, the sample of 204 caregivers of persons with autism was adequate to conduct factor analysis of the 28-item RS (Hair, Anderson, Tatham, & Black, 1998). In addition, the Kaiser-Meyer-Olkin (KMO) value was checked to determine whether the sample was adequate for factor analysis. A value of at least .60 is required (Tabachnick & Fidell, 2001); in this study, the KMO value was .87, indicating that the sample size was adequate for factor analysis. Bartlett's test of sphericity was significant ($\chi 2 = 2451.47$; $p < .001$), indicating that the correlation matrix was appropriate for factor analysis (Strickland, 2003).

Having met the conditions of adequate sample size and suitability of the correlation matrix, the data from the 28-item RS were subjected to factor analysis. Confirmatory factor analysis was used to examine the construct validity of the 28-item RS because a 2-factor solution had emerged in the original study that tested the psychometric properties of the RS among older adults. Therefore, using the principal axis factoring method of factor extraction with oblique (direct oblimin) rotation and forcing the 28 items onto 2 factors, 41.13% of the variance in scale items was explained. Similar to the original study that tested and developed the RS in older adults, 16 items loaded on the first factor representing personal resourcefulness and 12 items loaded on the second factor representing social resourcefulness; 21.69% of the total variance was explained by the first factor, and 19. 44% was explained by the second factor. Of note, none of the items cross-loaded on the other factor (Table 3). Thus, factorial validity was supported by the emergence of the two dimensions of resourcefulness (personal and social) in a confirmatory factor analysis and by substantial intercorrelations between the two subscales ($r = .48$, $p < .001$).

Table 3. Confirmatory Factor Analysis of the RS: Two-Factor Solutions.

RS Item No.	Description	Factor 1 Loadings	Factor 2 Loadings
RS-1	Think about reward	.535	
RS-2	Creative visualization	.607	
RS-3	Cognitive reframing	.640	
RS-4	Express feelings to others		.560
RS-5	Let others make decision		.713
RS-6	Think about pleasant events	.622	
RS-7	Systematic problem solving	.721	
RS-8	Go to doctor		.526
RS-9	Think positively	.546	
RS-10	Depend on others		.843
RS-11	Keep busy	.513	
RS-12	Listen to others		.604
RS-13	Relaxation	.654	
RS-14	Get help from others		.703
RS-15	Overcome failure	.543	
RS-16	Impulse control	.496	
RS-17	Anger management	.666	
RS-18	Consider alternatives	.644	
RS-19	Borrow from others		.403
RS-20	Talk with others		.652
RS-21	Remain calm	.678	
RS-22	Planning behavior	.639	
RS-23	Record keeping	.514	
RS-24	Ask others to help		.647
RS-25	Allow others to do things		.682
RS-26	Go out with others		.544
RS-27	Be with others		.597

RS-28	Increase concentration	.531	

Note. RS = Resourcefulness Scale.

The majority of the communality values (82%) were above .30, and all 28 scale items had strong factor loadings, exceeding the minimum criterion of .30 (Table 2; Nunnally & Bernstein, 1994; Polit, 1996; Tabachnick & Fidell, 2001). Construct validity was also supported by significant correlations in the expected direction with measures of positive cognitions. For the total sample (N = 204), strong positive correlations in the expected direction were found between the RS and positive cognitions ($r = .58$; $p < .001$), indicating that higher caregiver resourcefulness was associated with greater positive cognitions. In the sample from Study 1 (n = 95), a significant negative correlation was found between caregiver burden and the RS ($r = -.36$, $p < .001$). In the sample from Study 2 (n = 109), significant correlations in the expected direction were found between the RS and measures of caregiver depression and psychological well-being ($r = -.47$, $p < .001$, and $r = .49$, $p < .001$, respectively).

Discussion

This psychometric analysis of the RS provides further evidence for its reliability and validity in a sample that differs from the original one on which the scale was developed. While the sample in the original study comprised older adults living in retirement communities with an average of three chronic health conditions and average age of 81 years, the scale has been used with younger populations with average ages of 58 years (Zauszniewski, Au, & Musil, 2012) and 46 years (Zauszniewski et al., 2008; Zauszniewski, Bekhet, & Suresky, 2009). The sample in the study reported here included family caregivers of persons with ASD who were even younger on average, that is, 42 years. These findings suggest that the scale is not age-dependent and is reliable and valid for adults of all ages.

In fact, the reliability analyses conducted in this study of caregivers of persons with ASD indicate greater internal consistency with a Cronbach's alpha of .91 in comparison with the study of elders where the alpha was .85, a study of family members of persons with serious mental illness where the alpha was .82 (Zauszniewski et al., 2008), and a study of grandmothers raising grandchildren where the alpha was .82 (Zauszniewski et al., 2012). However, the average inter-item correlation found in this study ($r = .27$) was higher than what was reported in the original psychometric study with elders ($r = .18$). Similar to the former psychometric analysis, the corrected item-to-total scale correlations for all 28 items on the scale fell into the desired range (Ferketich, 1991).

Evidence for the construct validity of the RS was also supported in this study of family caregivers of persons with ASD. As with other studies in which the RS was used, significant correlations with theoretically related constructs were found. Consistent with resourcefulness and quality-of-life theory (Zauszniewski, 2012), this study found that the RS correlated significantly with measures of burden and cognitions, which are described as process regulators associated with resourcefulness within the theory, and with depressive symptoms and psychological well-being, which reflect indicators of quality of life within the theory. The findings are also consistent with those found in a study of family members of persons with serious mental illness (Zauszniewski et al., 2009) where resourcefulness was found to be associated with measures of depressive cognitions, caregiver burden, and mental health, and with a study of grandmothers raising grandchildren (Zauszniewski et al., 2012) in which resourcefulness was correlated with measures of perceived stress and depressive symptoms.

The findings from the confirmatory factor analysis in the study reported here closely replicate the findings from the original psychometric study of the RS in the sample of older adults. It is clear that two dimensions of resourcefulness, personal and social, comprise the scale and that these dimensions are correlated but not redundant. Close inspection of the items that load on each of the two factors reveals that the items loading on the personal-resourcefulness factor reflect the use of self-help strategies and the content of the items that loaded on the social SRS focus on help-seeking behaviors. In the study reported here, as in the former study, none of the items loaded on both factors, indicating that the two dimensions of resourcefulness are relevant and the resourcefulness measure is valid for adults of all ages.

In conclusion, this psychometric study of the RS in family caregivers of persons with ASD provides further evidence of the measure's reliability and validity. Further examination of the RS in other samples and using other theoretically related constructs that are consistent with resourcefulness theory is recommended. Because resourcefulness is believed to play an important role in preserving and protecting health and quality of life (Zauszniewski, 2012), a reliable and valid measure is essential for determining one's level of resourcefulness and the degree to which one may benefit from an intervention that teaches the self-help and help-seeking skills constituting personal and social resourcefulness, respectively (Zauszniewski et al., 2012).

Limitations of the study include use of a convenience sample of caregivers of persons with ASD who use the Internet; therefore, the results are generalizable only to those ASD caregivers who use the Internet. However, the advantage of using the Internet was the ability to recruit a national sample of ASD caregivers. Another limitation is that this study was a secondary analysis of existing data. So, we were limited to the use of the existing measures for validation, and, consequently, convergent validity could not be assessed. Future studies might consider adding another resourcefulness measure to assess the same purported construct of resourcefulness. In addition, it is documented in the literature that incentives could be an issue related to the reliability and validity of the data. However, it should be noted that the incentive was given for the parent study and not for this specific analysis that the study participants could not have anticipated. Therefore, it is less of a concern with this analysis than it might have been for the parent study.

Finally, it was impossible to know whether the same caregivers participated in both studies. It is unlikely that this could have happened because the two studies were collected in two different points of time. In addition, participants were recruited by convenience sampling from the IAN, which has consented approximately 15,000 parents of children with ASD. Given the large number of parents participating in the IAN and the considerably small sample sizes in both studies, along with different time points, it is unlikely that the same caregivers participated in both studies. Although the sampling method through the ASD network offers a great opportunity for reaching a very large number of potential study participants, this could be one of the limitations of using that network.

This study has implications for practice. The RS can be used by nurses and health-care professionals to assess the level of resourcefulness among caregivers of persons with ASD. Because the RS measures personal and social resourcefulness, nurses and health-care professionals will be able to assess both aspects and to determine the degree to which caregivers may benefit from an intervention that teaches the self-help and help-seeking skills constituting personal and social resourcefulness,

respectively. In fact, assessing caregivers' frequent use of self-help and help-seeking behaviors will help early detection and prevention of burden and the subsequent anxiety and depressive symptoms that might develop as a result of caregiving and not using the self-help and the help-seeking strategies. The RS will help us to identify which of the resourcefulness skills are used by the caregivers so they can be reinforced and which skills have not been used so they can be taught to attain a better quality of life for ASD caregivers. Interventions to enhance self-help and help-seeking behaviors might also be directed toward those ASD caregivers who are at risk of developing burden, such as those who have recently learned about their child's diagnosis. Teaching the caregivers personal and social resourcefulness early will help to protect their health and quality of life so that they can continue providing optimal care to their children.

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